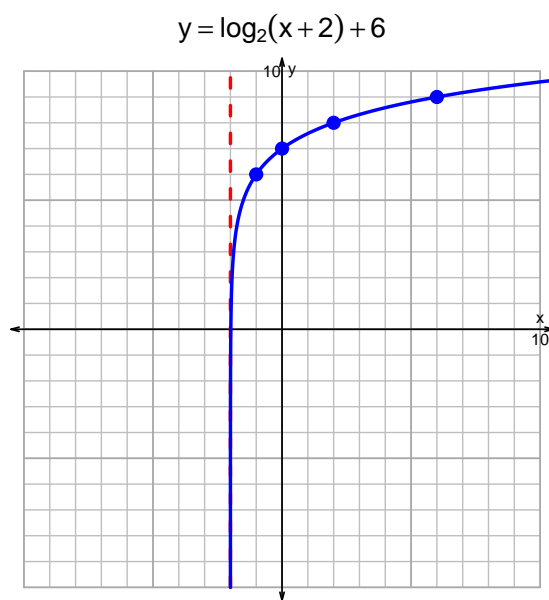
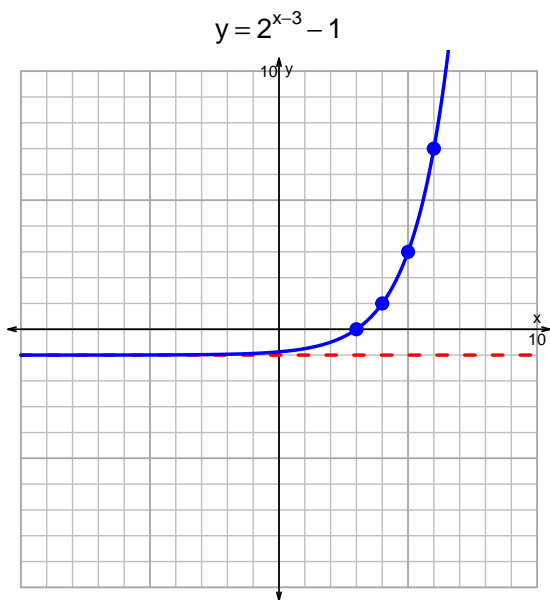


Name: \_\_\_\_\_

Date: \_\_\_\_\_

## s18: EXP LOG (SLTN v344)

1. (10 pts) Graph  $y = 2^{x-3} - 1$  and  $y = \log_2(x+2) + 6$  on the grids below. Also, draw any asymptotes with dashed lines.



*Somewhat useful hint:*  $2^3 = 8$ , and thus  $\log_2(8) = 3$ .

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$-17 = \left(\frac{-4}{5}\right) \cdot 10^{3t/7}$$

Divide both sides by  $\frac{-4}{5}$ .

$$\frac{17 \cdot 5}{4} = 10^{3t/7}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{17 \cdot 5}{4}\right) = \frac{3t}{7}$$

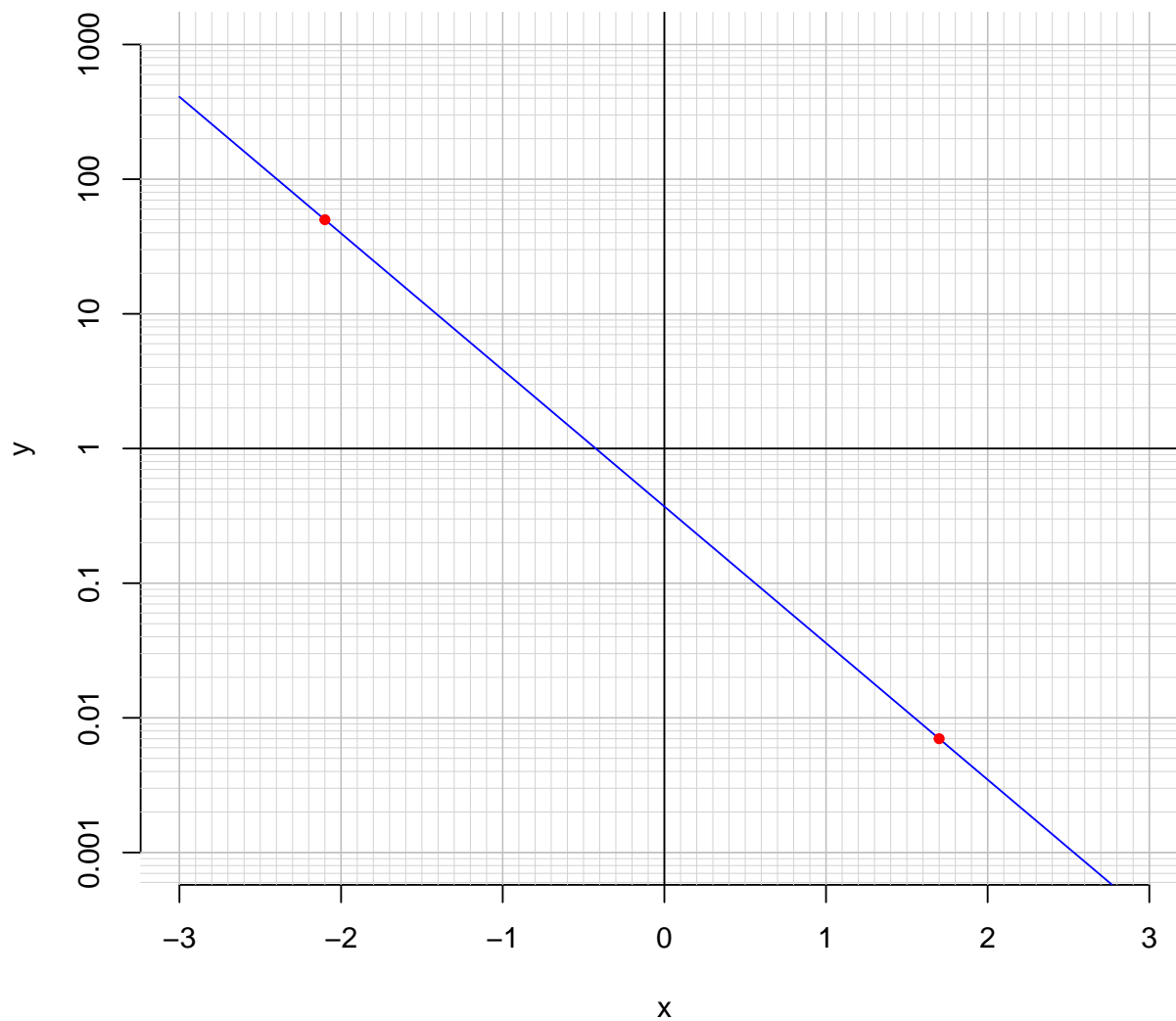
Divide both sides by  $\frac{3}{7}$ .

$$\frac{7}{3} \cdot \log_{10}\left(\frac{17 \cdot 5}{4}\right) = t$$

Switch sides.

$$t = \frac{7}{3} \cdot \log_{10}\left(\frac{17 \cdot 5}{4}\right)$$

3. (10 pts) An exponential function  $f(x) = 0.371 \cdot e^{-2.34x}$  is graphed below on a semi-log plot.



- a. Using the plot above, evaluate  $f(1.7)$ .

$$f(1.7) = 0.007$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{-1}{2.34} \cdot \ln\left(\frac{x}{0.371}\right)$$

Using the plot above, evaluate  $f^{-1}(50)$ .

$$f^{-1}(50) = -2.1$$